

**HEAT TREATMENT OF TITANIUM-ALLOY ARTICLE
HAVING MARTENSITIC STRUCTURE**

ABSTRACT OF THE DISCLOSURE

An article is formed of an alpha-beta titanium-base alloy, preferably an alloy having more than about 3.5 weight percent molybdenum. An example of such an article is a gas turbine compressor blade having a nominal composition, in weight percent, of about 4 percent aluminum, about 4 percent molybdenum, about 2 percent tin, about 0.5 percent silicon, balance titanium and impurities. The article is processed to form a martensitic structure therein. The processing, which typically involves forging or weld repairing, includes the steps of first heating the article to a first-heating temperature of greater than about 1600°F, and thereafter first cooling the article to a temperature of less than about 800°F. The article is thereafter second heated to a second-heating temperature of from about 1275°F to about 1375°F for a time of from about 1 to about 7 hours, and thereafter second cooled to a temperature of less than about 800°F at a second cooling rate that does not exceed about 15°F per second.

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